Green Emperor dragonfly (*Anax gibbosulus*)

METAMORPHOSIS

aUSTRALIA

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PLANNING AND ORGANIZING COMMITTEE 2010

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Planning and Organization Meetings

A quarterly meeting is scheduled in order to plan club activities and the magazine. See BOIC Programme.

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PO Box 2113, Runcorn, Queensland 4113
Membership fees are $25 for individuals, schools and organizations.

Aims of Organization

- To establish a network of people growing butterfly host plants;
- To hold information meetings about invertebrates;
- To organize excursions around the theme of invertebrates e.g. butterflies, native bees, ants, dragonflies, beetles, freshwater habitats, and others;
- To promote the conservation of the invertebrate habitat;
- To promote the keeping of invertebrates as alternative pets;
- To promote research into invertebrates;
- To encourage the construction of invertebrate friendly habitats in urban areas.

Magazine Deadlines

If you want to submit an item for publication the following deadlines apply:
March issue – February 14th June issue – May 14th
September issue – August 14th December issue – November 14th

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Cover

Green Emperor dragonfly (*Anax gibbosulus*) - Painting by Lois Hughes. Prints of this painting may be available from the artist. Ph. 07 3206 6229.

From the President

On page 33 of our magazine you will find an obituary to Charles McCubbin who was a member of the BOIC. I have written to Mrs McCubbin on behalf of the Club extending condolences to her and to family members.

Once again, I am somewhat in awe of those who have contributed to this edition of our magazine. I start by thanking all of them but want to pay special tribute to the work of Graham Forbes, as I know that his findings are the result of trips to Northern Queensland and careful observations over some years. Similarly, Murdoch De Baar, Trevor Lambkin and Ian Knight have invested so much time and energy in the Torres Strait area that they must be eligible for honorary citizenship of the area.

If you have tried to photograph dragonflies, you will appreciate the patience of Mark Sanders in capturing images of these striking creatures. I thank him for allowing us to publish some of the images from his collection. Netting a species that flies like an agile rocket is no mean feat but when this feat creates a new record then this becomes rather special, as you will read from Barry Kenway's account of meeting the Green Emperor.

Some of us remember Cecil B. De Mille and his epic movies with their cast of thousands. I believe Ray Archer is cast in a similar mould as he has quickly assembled a large group of volunteers to help in the Butterfly Plants for Poverty project. It is particularly encouraging to have one of the main aims of the BOIC taken up by Ray with the result being that a wide range of butterfly hosts will soon be readily available.

Rod Jackson has taken on the role of editor of the BOIC website and we will see the results of his work in the coming months. Best wishes **Ross**

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Creature Feature

Meeting the Emperor – Barry Kenway

My first and only encounter with the Green Emperor dragonfly (*Anax gibbosulus*) was during the joint Entomological Society of Queensland and Queensland EPA's BugCatch weekend at Cooloola National Park in February 2006.

A variety of "dragons" and "damsels" were busy in and near a small body of shallow water. This was little more than a wide ditch in the low plain adjacent to Kin Kin Creek. A very large and spectacular dragonfly began swooping down over emergent vegetation before circling high and settling in nearby trees. This behaviour was repeated several times.

Apart from its sheer size, other obvious eye-catching features were the broad green sides of the thorax, the striking blue patches on segment 2 of the abdomen and a silvery-white section below the blue.

One lucky strike and the unknown dragon was ready for closer scrutiny! With an overall length of 95mm and a wing span of 120mm it was larger than any dragon I had previously seen. (It turned out to be the second largest dragonfly in SEQ.)

Both photos *Anax gibbosulus* female
Photos copyright Queensland Museum – Jeff Wright

After returning to Toowoomba, Watson and Theischinger's 1991 key was consulted. This identified the unknown giant as belonging to the *Anax* genus. But this genus was not to be found south of Rockhampton. Something was wrong!

The late Ric Nattrass was at that time about to publish his field guide to the Odonata of South East Queensland. I rang to consult with him. He assured me that no such an animal was to be found in SEQ!

The following morning we collaborated below the Toowoomba Range and Ric escorted the mystery dragon to the Queensland Museum for positive identification.

Size and a dark T-shaped mark on the top of the frons determined it was the Green Emperor and not the lookalike Lesser Green Emperor (*Anax guttatus*). This necessitated a hurried insertion of an additional page to his guide and provoked some jovial complaints from Ric!

However a little later, while launching his field guide at Chinaman Creek, another Green Emperor put in an appearance. After netting this one, yet another started patrolling the same area. Ric could confidently point to his new field guide!

Since then the Green Emperor has been seen on a number of occasions at the Mount Coot-tha Botanic Gardens (A. Pollock pers. comm.) and elsewhere in Brisbane – well over 100 kilometres further south of the "original" sighting. Why has it not been recorded earlier? Could it be another sign of global warming? Gunther Theischinger (pers. comm.) believes the Green Emperor has been in SEQ for many years. He feels there have been far too few serious odonatists out and about. Maybe so or perhaps we are unaware of what has already been collected or recorded. Whatever the reason for its very late appearance in the literature, this spectacular "dragon" is a welcome addition to the odonate fauna of our region.

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ITEMS OF INTEREST

Dragonflies collected on Dauan Island, Torres Strait, Queensland - M. De Baar, A.I. Knight and T.A. Lambkin

Dauan Island which lies in the northern part of Torres Strait, despite its small area of 400 ha, is a diverse island dominated by the boulder-stacked Mt Cornwallis (295 m). Monsoonal vine thickets grow over weather-worn boulders that adorn a good proportion of the island. The island has a good representation of mangroves and its close proximity to the vast swamps of Papua New Guinea provides easy access for

dragonflies. Between January 2008 and January 2010, three visits were made to Dauan Island (14–21 January 2008, 1–8 April 2009 and 15 December 2009-11 January 2010) and dragonflies (Order Odonata) were collected. Damselflies (suborder Zygoptera) were not collected during the visits. The Species collected over this period are listed below.

Species collected:

Aeshnidae:

Anax guttatus (Burmeister)
Anax gibbosulus Rambur

Libellulidae:

Brachydiplax denticauda (Brauer)
Camacinia gigantea (Brauer)
Camacinia othello Tillyard
Diplacodes nebulosa (Fabricius)
Diplacodes trivialis (Rambur)
Lathrecista asiatica festa (Selys)
Nannodiplax rubra Brauer
Neurothemis stigmatizans bramina (Guerin)
Neurothemis decora (Brauer) (positive siting only)
Orthetrum villosovittatum (Brauer)
Orthetrum sabina (Drury)
Pantala flavescens (Fabricius)
Rhyothemis phyllis beatricis Lieftinck
Tholymis tillarga (Fabricius)
Tramea propinqua Lieftinck
Tramea loewii Kaup

Notable species:

Neurothemis decora (Brauer). This readily identifiable and very distinctive species which was previously unrecorded from Australia (Theischinger & Hawking 2006, Watson, Theischinger & Abbey 1991) was observed in January 2008 flying under thick scrub behind the beach adjacent to the village. It is of medium size, with jet-black wings tipped with white.

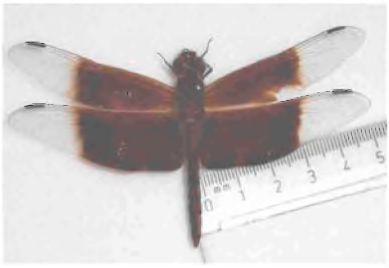

Fig. 1. *Camacinia gigantea*

Camacinia gigantea (Brauer) (Fig 1). On 16 December 2009 this species was collected flying over a shallow pond surrounded by tall grass and flanked by *Pandanus* sp. This is the first Australian record for *C. gigantea* (Theischinger & Hawking 2006, Watson, Theischinger & Abbey 1991). The Black Knight, *C.*

othello Tillyard (Fig. 2), was also observed on 8 January 2010 at the opposite end of the island flying and perching along a deep, narrow creek recently swollen by heavy rain, and surrounded by tall grass.

Neurothemis stigmatizans bramina (Guerin) (Fig. 3). This species was observed frequently on Dauan Island. Endersby (2009) states that the Painted Grasshawk, *N. s. stigmatizans* (Fabricius), is the only subspecies represented in Australia. We have illustrated a New Guinea specimen now recorded from Australia. This subspecies has more extensive reddish brown on both wings than the presently known Australian subspecies *N. s. stigmatizans*.

Rhyothemis phyllis beatricis Lieftinck (Fig. 4). This species, the Yellow-striped Flutterer, appears to be a common species on Dauan Island, and is seldom illustrated in reference books, so we have included a photograph (Fig. 4).

Anax guttatus (Burmeister) (Fig. 5). The Lesser Green Emperor, *A. guttatus*, is also common on Dauan Island but only one specimen of the Green Emperor, *A. gibbosulus* Rambur, was taken. These two species are already known in Queensland but *Anax* is represented by six species on the Papua New Guinea mainland (Lieftinck 1942) so it is likely that further species of *Anax* will be recorded in the future.

Tholymis tillarga (Fabricius). The Twister, *T. tillarga,* was often observed flying at dusk along beach margins where they darted up and down.

Acknowledgements:
We wish to thank Deniss Reeves for drawing extensive New Guinea-related literature to our attention.

Photos Murdoch De Baar

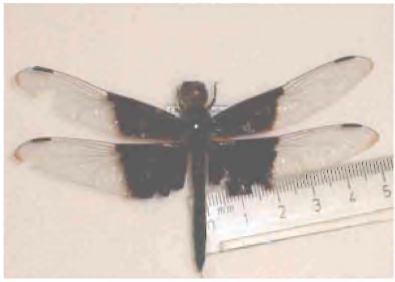

Fig. 2. *Camacinia othello*

Fig. 3. *Neurothemis stigmatizans bramina*

Fig. 4. *Rhyothemis phyllis beatricis*

Fig. 5. *Anax guttatus* showing male anal appendages and head

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Dragonfly Photo Gallery - Mark Sanders

Palemouth *(Brachydiplax denticauda)*

Common Glider (*Tramea loewii*)

Slender Skimmer (*Orthetrum sabina*)

Pygmy Percher (*Nannodiplax rubra*)

Painted Grasshawk
(*Neurothemis stigmatizans*)

Australasian Slimwing
(*Lathrecista asiatica festa*)

All images: copyright - Mark Sanders: www.EcoSmartEcology.com.au

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Comparison of the immature stages of P*hiliris sappheira manskiei* Ring and Olive, and *P. nitens nitens* (Grose-Smith) (Lepidoptera : Lycaenidae) - Graham R. Forbes

Abstract

During 2002, 2007 and 2008 the early stages of the Lycaenid butterflies *Philiris sappheira manskiei* Ring and Olive, 1997 (Sapphire Moonbeam) *and Philiris nitens nitens* (Grose-Smith, 1898) (Blue Moonbeam) were studied to determine the differences, if any, between them. The larvae and pupae of both species are described and figured.

Introduction

Sands and Fenner (1978) recorded the presence of *P. nitens* at Rouna, Central Province, Papua New Guinea and later Sands (1980) described this population as *P. nitens sappheira.*

Ring and Olive (1997) raised *P. nitens sappheira* to specific level and described the restricted northern Queensland population that was first discovered in 1982 by Mr. John Booy as *P. sappheira manskiei.*

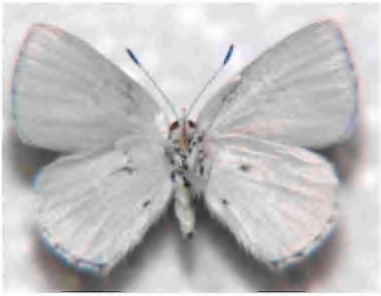
Their separation of the two species was primarily based on the differences of the male genitalia and the upperside wing patterns of the male. They also stated that the early stages of the two taxa appeared indistinguishable.

Life History of *Philiris sappheira manskiei*

Philiris sappheira manskiei
male upperside

Philiris sappheira manskiei
male underside

Philiris sappheira manskiei
female upperside



Philiris sappheira manskiei

Photos Peter Hendry

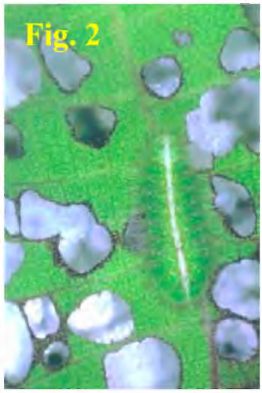
Egg (Not illustrated)

Diameter 0.5 mm, white, spheroidal, attachment surface flattened. Surface with concentric rows of conical protuberances, each finishing as a smooth slender spine, many of which are terminally bifurcate. Micropylar pit not observed as all eggs examined had previously hatched.

Larva (Figs. 1 and 2)

Early instar, the smaller of the two larvae figured, (Fig. 1) length 9 mm, width 2 mm at segment 3 tapering to 1.5 mm at segment 10, onisciform, hirsute, segments distinctly convex at margin, green with a pair of pale green blotches on each segment, segment 4 with a distinct red-brown median spot.

Final instar (Fig. 2) length 16 mm, width 5 mm at segment 3 tapering to 4 mm at segment 10, other features as for early instar with the median band more prominent and spot on segment 4 paler and divided.



Pupa (Fig. 3)

Length 8.5 mm, width 4 mm, height 3 mm, oval in shape, flattened, smooth, hirsute, green with white median line interrupted by :

(i) on abdomen by four transverse pale green bars terminating at each end with distinct brown spot, the included white median band speckled brown and

(ii) on thoracic hump with triangular patch speckled brown.

Spiracles on abdominal segments prominent, white.

Photos Figs.1, 2 &3
Greg Daniels

Foodplant

The foodplant is *Macaranga involucrata var. mallotoides* (F.Muell.) L.M. Perry (family Euphorbiaceae). The plant's distribution includes the coastal areas of Northern Territory and the east coast of Queensland from Torres Strait to Port Curtis and it is also recorded from Papua New Guinea.

Biology

The eggs are usually laid singly on the underside of the leaves of the foodplant. The young larvae feed on the tissue of the under-surface of the mature leaves producing a series of "windows" close to the mid-rib.

The mature larvae feed randomly on the under-surface of the leaves producing irregular holes. Only one larva is found on the leaves of a branchlet with usually only one to three larvae found per branch.

Pupation occurs on the under-surface of the leaf close to the mid-rib, the pupae being attached by cremaster and girdle.

No ants were observed in attendance.

Note that the presence of two larvae (one early and one mid-term) on the same leaf as shown in (Fig. 1) is due to them being reared in captivity. This is not usually seen in the field.

Life history of *Philiris nitens nitens*

Philiris nitens nitens
male upperside

Philiris nitens nitens
male underside

Philiris nitens nitens
female upperside

Philiris nitens nitens
female underside

Photos Peter Hendry

Egg (Fig. 4)

Diameter 0.4 mm, white, spheroidal, attachment surface flattened. Basal hemisphere surface smooth, lumpy, upper hemisphere covered with concentric rows of irregular shaped pits, connecting ridges extending upwards at junctions producing prominent slender spines terminally branched at the tips, many trifurcate. Micropylar pit roughly circular, surrounded by seven irregular pits.

Photo Bob Miller

Larva (figs. 5 and 6)

Early, probably third instar (Fig. 5) length 9 mm, width 2 mm at segment 3 tapering to 1.5 mm at segment 10, onisciform, hirsute, segments distinctly convex at margin, green, a pair of pale green blotches on each segment adjacent to white median line. Occasionally posterior end of median line capped dark brown. Spiracles prominent, white.

Final instar (Fig.6) length 16 mm, width 5 mm at segment 3 tapering to 3 mm at segment 10. Other features as for early instar.

Pupa (Fig. 7)

Length 9 mm, width 4 mm, height 3 mm, oval in shape, flattened, smooth, hirsute. Colour green with white median line interrupted :

(i) on abdomen by a distinct circular patch speckled red brown, and

(ii) on thoracic hump by red brown oval patch clasped by two pale green arms.

Spiracles prominent, white.

Photos Figs. 5, 6 & 7
Graham Forbes

Foodplant

The foodplant utilized by the specimens studied is *Macaranga involucrata* while *Glochidion philippicum* (Cav.) C.B. Rob. and *Macaranga tanarius* (L.) Muell.Arg. are also recorded as being utilized by Braby (2000).

Biology

Very similar to that of *P. sappheira.*

Discussion

Eleven specimens of *P. s. manskiei* were reared through to adults. All specimens were collected within an area located at 15 15 14 S, 144 59 52 E on the Isabella-McIvor River Road approximately 40 km north of Cooktown.

Fourteen specimens of *P .n. nitens* were reared through to adult. All these specimens were collected along the Cairns-Yarrabah Road, Cairns and at Fishery Falls, Gordonvale.

The early stages of both species, while being similar, do exhibit certain consistent differences.

The egg of *P. sappheira* has a majority of the spines bifurcate whereas in *P. nitens* the majority of the spines on the egg are trifurcate. The general body shapes of the two larvae differ in that the larva of *P. nitens* tapers uniformly along its length compared to *P. sappheira* which is clearly wider anteriorally. *P. nitens* larvae also lack the distinct median red spot on the fourth segment as is present in *P. sappheira.*

The dorsal abdominal patch of the *P. nitens* pupa is more pronounced with the circumscribed patch heavilyspeckled red brown, whereas this patch on the *P. sappheira* pupa consists of several indistinct transverse bars. The thoracic patch on the *P. nitens* pupa is also more distinct and is oval in shape whereas that of the *P. sappheira* pupa is fainter and tending to be triangular in shape.

Some slight individual variation was observed in that the red spot on segment 4 of the *P. sappheira* larva was paler in some specimens as was the thoracic patch on the *P. sappheira* pupa. The colour and markings of the *P. nitens* larvae and pupae appeared to be more constant.

Acknowledgements

I wish to thank Mr Greg Daniels for his assistance with the photography and for his helpful advice, Mr Bob Millar for his help in obtaining and photographing some of the *P. nitens* material and Mr. Peter Hendry for his help with the photography.

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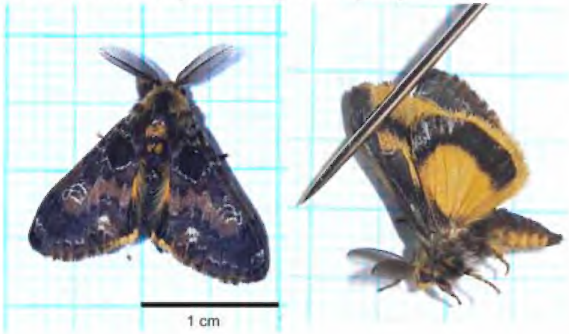
Painted Apple (or Acacia) Moth *Teia anartoides* - Linda Rogan

This year has been the perfect season for observing the entire life cycle of the Painted Acacia Moth in and around Melbourne. ("Acacia" being my preferred common name as this moth would have thrived in Victoria long before the importation of apple trees). I have been amazed observing the male and female interaction.

I first came across a caterpillar with four toothbrush-like clusters of bristles on its back, happily grazing in our garden on a young Red Stringybark *Eucalyptus macrorhyncha*. (a new food plant?) The tufts on its back appeared dark from above and nearly white from the side but the two horn-like tufts on its head were black. It had the typical appearance of a tussock moth caterpillar. It grew rapidly on the Stringybark leaves and pupated after about nine days. Thirteen days later, a delicately marked male brown moth with wonderful feathery antennae had eclosed. It wasn't until I chilled him enough to photograph his golden orange hind wings that I fully appreciated the "painted" quality. Chilling is a useful technique for photographing many insects without harming them, but after removing them from the fridge it may be necessary to be very quick. Have your camera set up first.



Male *Teia anartoides* newly eclosed and chilled for photo

Knowing that the female of this species is wingless, I was keen to have a good look at her.

The opportunity arrived soon. In February 2010, my husband spotted a large number of these caterpillars feeding on *Acacia dealbata* along the Plenty River. I collected three of the largest, carefully avoiding the hairs that irritate the skin, and took them home for observation. This time I hoped for females. Pupation occurred within 7 days, two amongst the Acacia leaves, and one in the corner of the terrarium. I gently slid a small stick between the cocoon and the terrarium, hoping to be able to remove it for observation later. I understood the females stay with their cocoon. Only nine days later, at about 11 am, I noted a change in the latter cocoon and carefully extracted it on the stick. Close examination showed the female: a plump, blond creature, more than 2 cm long and mostly covered with golden hair. She hardly resembled a moth, as I knew it. She hung on to her cocoon as I took her outside immediately even though this is normally a night flying moth. Pat and Mike Coupar, had urged me to do so in

Male (inset) and female *T anartoides* larvae

an earlier conversation. Within moments a male moth with golden under-wings was fluttering against my forearms. It seems I had picked up some pheromones while transporting the female. About twelve minutes later, his plume-like antennae had led him to the female, the source of the pheromone scent trail. Soon two more males arrived.

I have since been told by John Moss and by another keen entomologist, who each put their females outside only at night, that they attracted no males.

There had been one mating and all three males were in close attendance when she started elongating her body and greenish-yellow hairless bands showed between rows of fur.

Eclosed female

By then, she was already in the process of laying tiny white eggs. The attentive courting continued until the last male left at dark and I think that egg laying continued into the night. The more eggs she lay, the smaller she became.

Female shows hairless rings and is attended by three males.

By 1:59pm egg laying had commenced.

On 26 March, the female was lifeless and eggs had disappeared.

At six days, she appeared barely alive when I checked her before being away for eleven days. On day 17, I returned to find that the female had withered away to about 1 cm, showed no sign of life, and the eggs were gone.

John Moss confirms that in that time, larvae could have hatched, eaten their egg cases, died and desiccated, being small enough to be nearly unnoticeable. At least one individual did slip out as I later found a desiccated carcass with silk thread attached, on the table nearby. Normally the larvae would utilize this silk thread as a parachute to carry them away in the slightest breeze; a practice that assists their dispersal.

Another factor in the success of this species is polyphagic feeding. In humans polyphagia is a medical condition causing excessive or pathologic eating. In insects polyphagia indicates the ability to feed on many different food plants, a great benefit for survival in a changing environment. Farmers in NZ, where it arrived between 1999 and 2002, consider this moth a serious biological pest as it eats the leaves of young pine trees, acacias, roses and apples as well as some native trees.

During my time away, a second female had eclosed and laid her eggs but being confined to the house, no males had been able to fertilize the eggs and there was no further development.

Although disappointed at having missed the emerging larvae, I took a composite photo illustrating my observations, to the meeting of the Entomological Society of Victoria. I was a bit deflated when an eight page presentation on the same moth by nature photographer Rudie Kuiter, was presented by Peter Marriott, the Society president, that evening.

Fortunately Rudie has given permission for me to use his caterpillar photos and even better to share his beautiful photo essay. A free .pdf file, or a printed copy for $10, is available via Rudie's email address as follows: rudiekuiter@optusnet.com.au

One final word to those of you who are apple growers, don't despair. *Growing Organic Apples* by Rural Industries Research and Development Corporation states that with vigilance the caterpillars can be "confined to a few trees and effectively controlled by hand removal."

Rudie Kuiter's photos show the hatching larvae and silken threads.

With the exception of the photo above, all photos are by Linda Rogan

References:
Coupar, Pat and Mike, 1992. Flying Colours – Common caterpillars, butterflies and moths of south-eastern Australia. New South Wales University Press.
Kuiter, Rudie H. , 2010. All about *Teia anartoides* . Aquatic Photographics.
Painted Apple Moth (*Teia anartoides*) OzAnimals.com
Growing Organic Apples World class production systems for new Australian apple varieties by Rural Industries Research and Development Corporation, Australian Government 2008.

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Life History Notes on the Chrome Awl, *Hasora chromus* (Cramer,[1780]) Lepidoptera: Hesperiidae - Wesley Jenkinson

This species is well known to North Queensland butterfly enthusiasts and is now becoming more commonly observed in Southeast Queensland. My first encounter with this species was in the Brisbane western suburbs where Pongamia (*Millettia pinnata* - previously known as *Pongamia pinnata*) trees line the footpaths. I have also found larvae and pupae on several trees growing in a park in Childers near Bundaberg (this area not shown on map for this species in Braby 2000).

Many eggs, larvae and pupae can be located on a single tree (P.S. Valentine 1988). The larvae and pupae can be located by checking remaining leaves on trees where the fresh shoots and young leaves have been well chewed or stripped leaving exposed branch tips.

I planted a *M. pinnata* tree in my yard (at Beaudesert in Southeast Queensland) several years ago, hoping to attract the Narrow-winged Awl (*Badhamia exclamationis*) which occasionally migrates seasonally into this region. So far I haven't located any larvae or pupae of this species on the tree. However I was excited to observe a male Chrome Awl flying around the tree on the 7th March 2009. No females arrived and the male disappeared after several days.

Later, during mid February in 2010, a male and a female were also observed flying around the tree, and the female laid many eggs around the new leaf buds. This batch of eggs produced adults by mid March, with several adults emerging on the same day. Several eggs from this batch were then collected and raised to adults. Some adults were still present until early May.

Chrome Awl (***Hasora chromus***) Images left to right: male, female, male underside, female underside

Wingspans for the pictured adult specimens are 40mm males and 41mm females.

The adults of this species are very rapid fliers, the males readily defend territories perching on the tips of bared branches of the host tree (or nearby twigs) chasing other males away. The females are usually located flying around the host trees. I have watched adults walking along the branches imbibing what was thought to be a chemical substance produced from the tree. They also settle for long periods during the day hanging upside down below leaves, sometimes becoming active again towards sunset, similar to the Narrow-banded Awl (*H. khoda*).

Ovipositing females have a 'nervous' flight, searching for a suitable location on the host plant. During March, ovipositing was observed at different times throughout the day between 9.00am and 6.00pm, during sunny and cloudy conditions. They settled on the branches and walked briefly with the wings closed. Once a suitable location was found the abdomen was curled onto the leaf buds or fresh shoots and the eggs were laid singly.

Freshly laid and older eggs

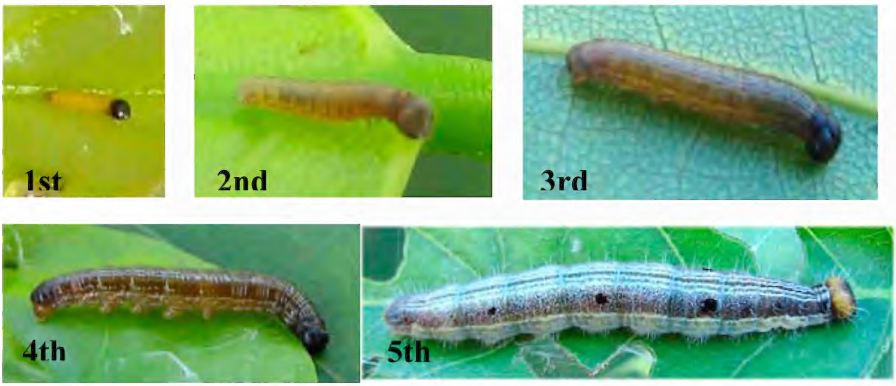
The dome shaped eggs are approximately 0.5 mm wide and 0.4 mm high with 18 vertical ribs. Initially they are creamy-white when laid, changing to pinkish red a day later.

1st instar larvae creating shelters

During April, several larvae emerged from their eggshells after 6.00 am and the eggshells were not consumed. The larvae later created shelters at the leaf apex. A small section of the leaf was cut and the ellipse shaped piece folded over the top of the leaf. This was then secured by silk strands. Several shelters were created throughout the larval duration. The shelters were located towards the outer edge of a leaf or sometimes the late instar larvae stitched two adjacent leaves together. They rested in their shelters and fed during the day

(similar observation by S. J. Johnson in Braby 2000). Late instar larvae will feed on the older, coarser leaves when no fresh leaves are available. When small larvae are numerous, I have seen up to three shelters on one leaf.

The larvae completed five instars and attained an average length of 38 mm.



Larval instars

Pupal shelter

Pupa with dorsal side facing up

The pupae, located in the final shelter facing ventral side down, were covered in a white waxy powder and measured from 20-22 mm in length.

An egg laid on 28th March hatched in 4 days. Larval duration was 17 days and pupal duration 13 days, with an adult emerging in May, 34 days after oviposition.
Within the new boundary of the Scenic Rim Regional Shire south of Brisbane, the adults appear to disperse after substantial rainfall, starting new localised colonies on single *M. pinnata* trees. In this area I only have recent records of the adults from late February to early May (producing two quick generations), even though the host tree produces fresh leaves in the spring months. It is doubtful that any larvae and pupae survive the cold winter months at this location where frosts occur. The trees are also

fully deciduous at this location, so the survival rate of any overwintering pupae would perhaps be very minimal.

Interestingly, *M. pinnata* is currently being researched by the ARC Centre of Excellence for Integrative Legume Research as a source of biodiesel, with oil being extracted from the seeds. With the possible cultivation of the trees outside their natural range *H. chromus* may extend its geographical range into new regions in the future.

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The ARC Centre of Excellence for Integrative Legume Research http://www.cilr.uq.edu.au/UserImages/File/factsheets/Pongamia%20Binder1.pdf

AT THE LIGHT TRAP

The Aganainae - Peter Hendry

The Aganainae are a small subfamily of moths containing about 110 species worldwide with up to 120 named subspecies and forms. The Australian count is 9 species. The Aganainae were once placed in the Arctiidae ("Tiger Moth" family) then in a family of their own, Aganaidae, but present works place them as a subfamily of the Noctuidae. The Australian fauna is contained in 4 genera: *Agape* (1), *Asota* (6), *Digama* (1), and *Neochera* (1). Of the known host plants the larvae generally feed on figs (Moraceae) with *Digama marmorea* (Butler, 1877) known to feed on *Carissa ovata* (Apocynaceae) and *Neochera dominia* (Cramer, 1780) recorded on *Marsdenia* (Asclepidacae).

At my light trap the Aganaidae are not often encountered. Frequenting the light trap in numbers, *Digama marmorea* is the exception. It is a frequent visitor at our bush block west of Bundaberg and also on our block south of Tenterfield. It is widely distributed in northern Australia as far south as Alice Springs in central Australia and in the east as far south as southern New South Wales (Common, 1990).

Agape chloropyga (Walker, 1854) has come to light on two occasions at my home in Sheldon, Redland City, once in February 2008 and again in August 2009.
In the garden I have found the larvae feeding on a potted specimen of *Ficus benjamina* and flushed the adults from the shrubbery on two occasions.

Asota iodamia (Herrich-Schäffer, [1854]) has also come to light at Sheldon on two occasions, being December 2007 and January 2008. It has a range from southern Queensland to central New South Wales (Common, 1990). In north Queensland I have had *Asota orbona* (Vollenhoven, 1863) come to light on two occasions in 2008, once 5.6 km west of Babinda and again 77 km north west of Mackay. Common lists it as occurring as far south as Eungella (west of Mackay). The Australian subspecies is *A. orbona queenslandica* named by Walter Rothschild in 1897and published in Novitates Zoological. The specimens examined for the description came from Cedar Bay (30 miles south of Cooktown), Cairns and Mackay.

Asota heliconia (Linnaeus, 1758) also came to light 5.6 km west of Babinda on the 23/10/2008. Common lists it as occurring as far south as Yeppoon (east of Rockhampton). The Australian subspecies, *A. heliconia dama,* was named by the Danish entomologist Johan Christian Fabricius in his major 1775 work Systema Entomologiae. This was when Australia was currently known as Nova Hollandia. *Asota plagiata* (Walker, 1854) came to light at Sheldon once on the 28/10/2009 and was found in the garden on another occasion, in February 2010. Common lists its distribution as in the Northern Territory and from Cooktown to northern New South Wales. John Moss who lives nearby in the Redlands regularly has both this species and *Agape chloropyga* in his garden where they both feed on *Ficus obliqua*, a strangler fig presently engulfing his back verandah!

The three species I have yet to encounter are *Asota australis* (Boisduval, 1832), *Asota caricae* (Fabricius, 1775) and *Neochera dominia* (Cramer, 1780).

Agape chloropyga

Asota heliconia

Asota iodamia

Asota orbona

Asota plagiata

Digama marmorea

Reference:

Common I.F.B., 1990. Moths of Australia. Melbourne University Press.

Photos Peter Hendry

Dragonfly views - Murdoch De Baar

I am presenting a series of common dragonflies (Odonata), naturally photographed and differently viewed in my Corinda garden, that might be expected to be encountered in a Brisbane garden. Nine species have been selected as an aid to recognising them, and also showing their living colours, so often lost in some set museum specimens. Some are easily recognised but a joy to observe.

Blue-spotted Hawker, *Adversaeschna brevistyla* (Rambur), fam. Aeshnidae

Scarlet Percher, *Diplacodes haematodes* (Burmeister), fam. Libellulidae

Fiery Skimmer, *Orthetrum villosovittatum* (Brauer), fam. Libellulidae

Wandering Percher, *Diplacodes bipunctata* (Brauer), fam. Libellulidae

Common Glider, *Tramea loewii* Kaup, fam. Libellulidae

Yellow-striped Flutterer, *Rhyothemis phyllis* (Sulzer), fam. Libellulidae

Australian Emerald, *Hemicordulia australiae* (Rambur), fam. Hemicorduliidae (previously Cordulidae)

Australian Tiger, *Ictinogomphus australis* (Selys), fam. Lindeniidae (previously Gomphidae).

Graphic Flutterer, *Rhyothemis graphiptera* (Rambur), fam. Libellulidae

Photos Murdoch De Baar

EXCURSION REPORT

Scenic Rim - Mt Greville and Reynolds Creek - Sunday, 9th May 2010 – Alisha Steward

We started the day early and met up at the Aratula Bakery, around a 1 hour drive from Brisbane. Some stragglers made contact to say that they were running a little late, so we ended up having time to grab a coffee. Once we were all together, we headed off for Mt Greville, another 15 minutes drive along scenic roads, with views to Lake Moogerah.

We aimed to hike to the summit of Mt Greville, whilst observing butterflies, other invertebrates, and plants along the way. The hike was described as a 4-hour return

walk, so I allowed 5 hours to cater for our constant stopping. We decided to scale the mountain via a pretty track through Palm Gorge. It didn't take long before we were more than pre-occupied, though John Moss discovered the shelter of a butterfly larva on a new host plant for the species. The plant in question was the Piper Vine, but the species of butterfly is currently a secret! Perhaps we will hear about the butterfly and new host plant in a future edition of our magazine? The shelter consisted of a flipped-over leaf section from a vine that was scrambling up a dark, rocky cliff within the gorge. Other notable butterfly host plants we found along the way included *Breynia oblongifolia*, *Hoya australis*, *Pomaderris* spp. and *Smilax australis*.

John Moss inspecting the Piper Vine
Photo Alisha Steward

Trident Pencil Blue
Photo Amanda Johnston

We were blessed with perfect hiking weather during the excursion. The air was cool and refreshing, and the crystal clear skies allowed for fantastic views. We wondered if we would ever reach the summit, as we seemed to reach numerous "false" summits, but eventually we made it! Mountain summits are usually great places to observe hill-topping butterflies, and this was no exception. One butterfly caught everyone's eye, but made its best effort to avoid us, landing on the highest trees at the summit. After examining a photograph of the mystery butterfly, we could determine that it was a Trident Pencil Blue.

For interest and a change of scenery, we decided to find a different route down the mountain. It started to look promising, but eventually all hope was shattered when we ended up at the very edge of a steep escarpment with no way down! I was glad we were able to explore this new area however. This section of the mountain was different to what we had been hiking through,

The intrepid hikers and a splendid view!
Photo Amanda Johnston

Photo Amanda Johnston

and was covered in low, shrubby bushes and grass trees. We observed Australian Admirals and Wanderers feeding from grass tree flower spikes, before we admitted defeat and turned around.

The hike took a lot longer than planned, and many of us were starving half way through it! I didn't suggest bringing lunch up the mountain, as I thought we would all be back at the carpark in plenty of time to eat it! I believe we made it to the carpark after 2pm… or was it even 3pm?... Just before reaching the carpark, a few of us observed a colourful Mouse Spider [see photo], which was an interesting end to a stimulating hike. I love hiking, but myself, and several others, were thankful that the hike had finally ended. All of the ups and downs weren't particularly good for our knees!

The second part of the excursion began after a 5 minute drive to one of my sampling sites that I am using for my PhD university research - Reynolds Creek. I discussed my PhD briefly, and I pointed out some of the invertebrates that I often collect for my research. I am interested in the terrestrial invertebrates that inhabit stream beds when they have dried up. The creek was flowing at the time of our excursion, but I was still able to locate some terrestrial invertebrates at the edge of the creek. Wolf spiders (Lycosidae) and ants were most common. In previous years, parts of Reynolds Creek have dried up by late winter.

Overall, and apart for near-starvation, we had an enjoyable excursion filled with interesting invertebrates, plants, and spectacular views! I have been asked to run this excursion sometime in the future. Look out for it!

Mouse Spider – Photo Amanda Johnston

Butterfly and moth list

Bronze Flat (*Netrocoryne repanda*)
Dingy Grass Skipper (*Toxidia peron*)
Chalky / Striated Pearl White (*Elodina parthia*)
Northern / Scarlet Jezebel (*Delias argenthona*)
Nysa Jezebel (*Delias nysa*)
Caper Gull (*Cepora perimale*)
Large Grass Yellow (*Eurema hecabe*)
Wanderer / Monarch (*Danaus plexippus*)
Lesser Wanderer (*Danaus chrysippus*)
Tailed Emperor (*Polyura sempronius*)
Australian Admiral (*Vanessa itea*)
Australia Painted Lady (*Vanessa (Cynthia) kershawi*)
Meadow Argus (*Junonia villida*)
Blue Argus (*Junonia orithya*)
Orange Ringlet (*Hypocysta adiante*)
Trident Pencil Blue (*Candalides margarita*)
Common Grass Blue (*Zizina labradus*)
Painted Pine Moth (*Orgyia australis*)
Leopard Moth (*Argina astrea*)

REPORT

A visit to the Eprapah Butterfly Garden – John Moss

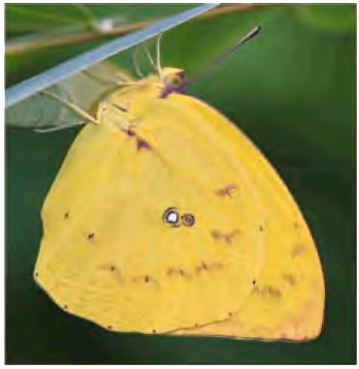
Soon after the April 17th 2010 Club Annual General Meeting, about half the members present drove the short distance to "Eprapah", the 39 hectare Scout Association property at Victoria Point where John Moss and a team of Green Corp volunteers had designed and built a butterfly garden in 2004. John has a major role in its current maintenance. Six years later the larval food plants and adult nectar plants have grown considerably, especially during the last two years of good rainfall.

On arrival, the first thing we noticed were two Sandpaper Figs (*Ficus coronata*) with the characteristic epidermal leaf chewings of the Common Moonbeam butterfly (*Philiris innotatus*) and considerable damage due to the pest Figleaf Beetle (*Poneridia* species) of which we saw several adults and their egg clusters. We had the good fortune to find many butterfly eggs, larvae (in various instars) and pupae (some pre-emergent) as well as many fresh adults. Several were disturbed as they were drying their wings, obviously only recently emerged! I believe that this phenomenon, which could be akin to a mass emergence, has never been reported previously.

Philiris innotatus larva
Photo Ross Kendall

On entering the garden loop track, we first noticed the leaf damage and shelters of the Chrome and Narrow-banded Awls (*Hasora chromus* and *H. khoda*) on their host plants Pongamia (*Millettia pinnata*) and Native Wisteria (*Callerya megasperma*) respectively.

Many mature Birdwing Butterfly vines (*Pararistolochia praevenosa*), Zig-Zag or Rauwenhoffia vines (*Melodorum leichhardtii*) and Burny vines (*Trophis scandens*) were awaiting visits from Richmond Birdwings, Fourbar Swordtails and Purple Crows respectively!

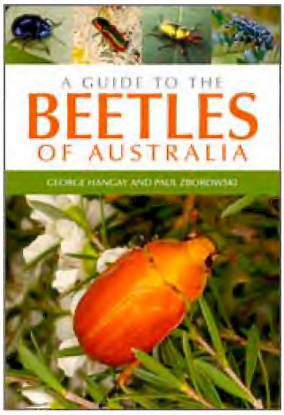


Catopsilia gorgophone
Photo Russel Denton

We were able to see mature larvae of both Fuscous and Orchard Swallowtails on two of their native host plants - *Glycosmis trifoliata* and *Micromelum minutum* or Limeberry. A lone, possibly parasitised, Blue Triangle larva was on the remaining leaf of a small local laurel, *Cryptocarya microneura* or Murrogun. On the three sennas - *Senna auriculata, S. acclinis* and *S. gaudichaudii* we found larvae and pupae of *Eurema hecabe* (the Large Grass Yellow) and *Catopsilia gorgophone* (the Yellow Migrant). Adults of both these were flying around us in the afternoon sunshine. Larvae of *Catopsilia pomona* (the Lemon Migrant) were seen higher up on a *Cassia brewsteri*.

Mynes geoffroyi
Photo Russel Denton

Further around on a clump of Native Mulberry *(Pipturus argenteus*) were several larval clusters of the White or Jezebel Nymph (*Mynes geoffroyi*) in various instars, as well as a dozen or so pupae lined up on the end of a branch looking like a colony of miniature fruit bats! Many clutches of eggs were also seen mostly on the upper surface of the leaf blades. Just prior to our leaving we also saw an adult female pretending to be a Common or Black Jezebel (*Delias nigrina*) which of course its colouration clearly mimics.



"A Guide to the Beetles of Australia" – reviewed by Densey Clyne

"A Guide to the Beetles of Australia" gives us both a general overview of these fascinating insects and a valuable introduction to the extensive Australian fauna. Author and photographer have combined their talents to produce a book that will appeal equally to the dedicated beetle enthusiast and those enjoying, for the first time, the undoubted delights of insect-watching.

George Hangay's text in the introductory chapters, and the general descriptions, is at just the right level for amateur coleopterists young and old. George really knows his beetles and he has also used his considerable artistic skills to provide useful illustrations.

Paul's Zborowski's photographs are superb and his coverage of species for this book is amazing. As an insect photographer I know all about the patience and dedication needed to get that perfect close-up or action shot of even one uncooperative subject. Paul has succeeded over and over.

We all think we know a beetle when we see one. It's the rather clumsy insect with rigid front wings and a slow buzzy flight. We recognise Christmas beetles and dung beetles and ladybirds and a few more. Gardeners in many parts of Australia know the dreaded *Monolepta* beetle, a tiny agricultural pest that can decimate a rose bush at the drop of an *elytrum.* But these familiar species give no hint of the immense variety and the incredible numbers of beetles that share our world.

In the Introduction to the book we read the astonishing fact that globally 'there are about 300 million insects for every living person' *and about 40% of them are beetles!* In Australia they have colonised almost every habitat including the summit of Mt. Kosciusko and subantarctic Macquarie Island. Their role in nature and their relations with humans, good and bad, are touched on here and there in a brief history of beetle studies in Australia.

The section titled "What Makes a Beetle" deals with the features that make beetles recognisable as a group, and includes an explanation of the brilliant, often metallic colours of many species. "Anatomy" follows, with a more detailed description of basic beetle anatomy and physiology. For beginners, this could be equally useful as

an introduction to insects generally, as there is much that is common to all insect Orders. However, some special features are described and illustrated. We learn for instance how that mysterious light is produced by the beetles we mistakenly call glow-*worms* and fire*flies*.

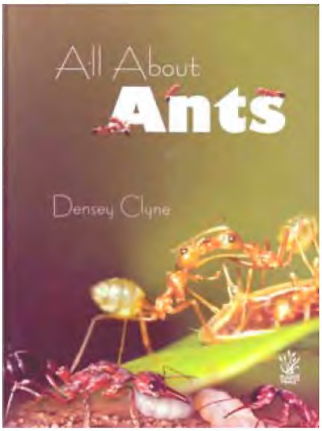
"Reproduction and Development" takes us through some typical beetle life histories with its stages of egg, larva, pupa and adult. Beetles are among the insects that go through a complete metamorphosis. While the true facts of insect metamorphosis are well known today, we can still be amazed by it. And it's not all that long ago that insects were thought to materialise from dewdrops, or, in the case of beetles, from manure! Early stages of various beetles are described and illustrated here and the life story of the Common Spotted Ladybird is featured. Dimorphism, polymorphism and longevity among beetles are described.

"Food and Survival" covers the diverse lifestyles of beetles and their strategies for obtaining food. There are beetle predators, plant and fungus eaters, parasites, coprophages and there are some fascinating symbiotic relationships. They themselves are a prime source of food for many predators - insects are escape artists without parallel. Most beetles are physically protected by their rigid wing covers or elytra. Some are distasteful or poisonous. Others depend for survival on amazing mimicry of ants, wasps and other dangerous insects. Against extremes of temperature beetles have also evolved some ingenious defences. With armour plating against their enemies, and an ability to eat just about anything, it's no wonder beetles are the most successful of all the insects.

A section on Higher Taxonomy lists the four suborders of beetles and the 18 superfamilies within them. The bulk of the book, from pp 45 to 222, comprises 91 family descriptions with photographs of representative species. The number of Australian families and subfamilies listed on the contents pages of the book is mind-boggling itself. It is an indication of both the extent and diversity of our Australian beetle fauna and of the challenge faced and met by the authors.

With this book a beetle can be checked for family or genus from the text and many species can be directly identified from the photographs and their captions - and the text throughout makes fascinating reading! For those like this reviewer who are disinclined to kill an insect simply to put a name to a photograph the book is an invaluable guide. I thoroughly recommend it.

A Guide to Beetles of Australia is available from BOIC at a member's price of $40 plus $5.80 postage and handling.



All About Ants, by Densey Clyne, published by Young Reed / New Holland Publishers, 2010 – reviewed by Alisha Steward

On first impressions, this book appears to be aimed at young children, with its fun title decorated with ants, and its large, simple cover. It is stated, opposite the contents page, that the book is written for primary school aged children. On closer examination, however, I found that this book would also appeal to older children and adults alike, myself included. The amazing images will most certainly delight youngsters, but understanding some of the words in the text, such as "benevolent", "belligerent", "pugnacious", and "protégées", may be a learning experience for them! It might be wise to ease into the book with very young children who haven't quite got a grasp of life and death – there are a few images of ants eating animals such as fish and birds ("Hunters and Scavengers"), and similarly there are images of animals, such as lizards and frogs, eating ants ("Ants on the Menu")!! I applaud this, as often the reality of life and death is missing from nature books.

For such a concise book of 48 pages, it contains a comprehensive contents page of 16 logical sections, a species list, a detailed glossary, a selection of relevant ant literature and an index. Words within the text that are capitalised, and appearing in bold, are defined later in the glossary.

The book begins with important ant information: "What an Ant is not" - introducing the Order Hymenoptera, and the non-ant members of the Order; "Take a Closer Look" - encouraging the reader to grab a magnifying glass and to find some ants to observe; "Founding a Dynasty" – describing the importance of the queen ants; and "Living Together" - an explanation of the different ant castes and how they interact with larvae, pupae, eggs and each other.

I was more than pleased to see butterfly-related sections in the book: the first, titled "Ants and Butterflies", describes the intimate, mutually beneficial relationship that some ants and Lycaenidae butterfly larvae share; and the second, titled: "The Killer Caterpillar", reveals the life of a caterpillar that eats its way through the ant larvae of a colony that it lives amongst!

The familiar entrances of ant nests that lead underground are described in the section "The Underground Movement", and the importance of ants to soil ecology is noted. A clever contrast showcases ants that live in trees on the following pages ("High-rise Living"), including a detailed account of the lives of Green Tree Ants, otherwise

called Weaver Ants ("Green Mansions"). I enjoyed the images of the Green Tree Ants stretched out, forming a chain in order to pull leaves together to make their nest. It was also amazing to see the images of the worker ants using the silk from larvae within the colony to weave the leaves together. How Densey Clyne was able to capture these intimate moments in such exquisite detail is difficult to comprehend!

"Coping With Climate" will be of interest to anyone, and the familiar images of Honeypot ants will put a smile on your face!

Another interesting section of the book is titled "Fakes and Phonies", discussing invertebrates that mimic ants for protection against other animals that may fear the bite or sting of the ant it resembles. Alternatively, some invertebrates trick ants by blending in with the ant species that they resemble, and then eating them! I fondly recall the first time I saw an Ant Spider – it looked very much like an ant, but then it jumped!

The remaining sections of the book discuss ants that collect seeds ("Harvesting"), ants and their sugar fetishes ("A Taste for Sugar"), and the differences between ants using their sting versus their mandibles for protection and capturing food ("Stingers and Squirters").

This delightful book is beautifully written, and tells you just about everything you need to know about ants. I enjoyed the detailed images of ants in action, as well as the fact that there was a large diversity of ant species pictured. The ant species are listed before the glossary, as are the species names of plants and other invertebrates mentioned throughout. I find the diversity of ants presented, coupled with the book's spectacular pictures, most appealing.

I particularly enjoyed reviewing this book as I have a scientific interest in ants. I appreciated the detailed text and its scientific accuracy (I also learned a few things about ants from this book!).

I thoroughly enjoyed Densey's personification of ants, and her humorous text such as "ants that fall into the pit-trap of an ant-lion are simply not looking where they are going" and "small male ants mill about waiting to take flight". She also describes a larva cared for by a worker ant as her "little sister". Densey suggests what the ants might be thinking, such as a Queen ant asking the question "Did I dream I was flying?" following her nuptial flight. Densey describes ants as interesting animals with idiosyncrasies, rather than small, simple creatures that bite people and ruin picnics. This book will be enjoyed by the target audience, but also by older readers who appreciate nature, attention to detail and Densey's humour and wit.

All About Ants is available from BOIC
for $19.95 plus $5.80 postage and handling.

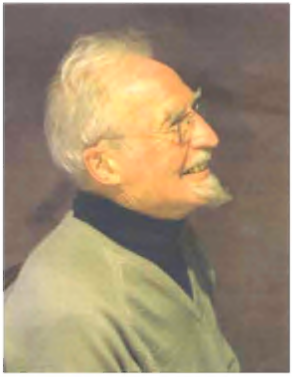
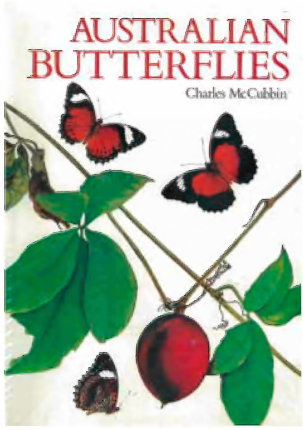


Photo used with the permission of the McCubbin family

Charles W. McCubbin (1930-2010)

Charles McCubbin, well known to many in the butterfly world, died on 21st June 2010 after a short illness. He was born on August 24th 1930, the son of Hugh and Winifred McCubbin. Hugh was a company director and the fourth son of the famous painter Frederick McCubbin, and Winifred an acclaimed painter in her own right. Charles included many environmental themes in his paintings, particularly the impact of land clearing and one of his best known was 'Sale in the Year of the Tree' (1983). He was asked by the ABC Natural History Unit to conceive and illustrate the impact of Europeans on the Australian landscape and a documentary was made on his depiction of the Westgate Bridge in Melbourne. He was a foundation and life member of the Wildlife Art Society and his works are still hung in regional galleries around Australia, as well as the National Gallery in Canberra.

Charles is also widely remembered for his crossing of the Simpson Desert with Warren Bonython in 1973. This was the first crossing of the entire desert on foot, covering 463km in 32 days whilst towing a 270kg trailer with their supplies, at a time when the desert was just starting to be explored by vehicle. Charles later said that the expedition cemented his appreciation of the country, but it also helped the wider Australian community understand the centre of the continent as an ecosystem full of life, not just the dead heart.



His expeditions lead him far afield, frequently to Tasmania where he worked with Arturs Neboiss of the National Museum of Victoria, to discover and study many new insect species, particularly beetles, flies and caddisflies. Many of these were Gondwanan insects groups that were previously thought to exist only in New Zealand and South America.

However, Charles McCubbin is best known in the entomological field for his landmark and prize-winning 1971 book "Australian Butterflies". This was one of my first insect books when I was a child and

has now become a collector's item. My copy is still filled with notes in the margins and small pieces of paper slotted between pages to mark items of interest. The butterfly illustrations demonstrate the remarkable detail characteristic of all Charles' works, but were also memorable for the evocative backgrounds of host plants, rainforests, rural landscapes and even classic buildings. The text is full of the anecdotes of an old-fashioned naturalist, noting the times, dates and weather conditions of his observations. These were personal observations and gave the reader the feeling of actually being present there in the field.

In my experience, Charles' love of the natural environment enabled him to make connections in nature that others overlooked. His detailed observations, built up over years in the bush, were those of a naturalist from the Victorian era, and I'd always thought he would have done well as one of the Government Naturalists employed in Australia during the 1800s. This made him an inspiration to many present-day naturalists at a time when the holistic approach to exploring ecosystems was losing favour.

Charles lent his skills to help set up the Melbourne Zoo Butterfly House in the early 1980s, when such expertise wasn't readily available. Butterfly Houses had been quite common in Europe and North America for many decades, but large-scale houses were still new to Australia. He provided background information on many of the species being flown, and helped devise the conditions for housing and husbandry. Although he kept a number of butterflies in captivity, most of this advice was derived from field observations over much of the continent. He was instrumental in guiding the Butterfly House in its early years, and his influence is still felt 25 years later. Over the years, Charles continued to visit from time to time, offering ongoing advice and suggestions for new projects, as well as welcoming staff from the zoo to his property in Sale.

Charles McCubbin served as a councillor for some years in the Wellington Shire and was a pillar in the local community. He was a mentor to many people, both naturalists and artists alike and will be remembered mostly for his generous mentoring and environmental advocacy. Charles is survived by his wife Patricia and his children Andrew and Joanna and will be greatly missed.

Patrick Honan

OFFER

SEQ. Butterfly Recording, word-document files on offer

- **Murdoch De Baar** murdoch.debaar@dpi.qld.gov.au

For the butterfly enthusiast, I again have on offer word-document updated files which will provide a system to help record / remember garden butterflies and district species in a list designed to record monthly larval and adult presences. Alternatively I have a document with **common names**, designed to record the species present in your

southeast Queensland locality. This file is designed for the southeast Queensland quadrant and includes a few peripheral species that may eventually expand their distributions. I have an Australian list also. I am offering these files to promote the recording of butterflies and better record keeping practices.

I had previously offered similar files (see references below):
*De Baar, Murdoch. **2002.** Butterfly recording file. Butterfly & Other Invertebrates Club Newsletter, # 27 (Dec. 2002)**:** 9 – 10.
*De Baar, M. **2005.** Southeast Queensland butterfly recording word-document file. News Bulletin of the Entomological Society of Queensland **33** (5)**:** 98 – 99.

For the monthly-recording file, I have delineated the district as Nambour roughly to Kilcoy through Coominya (including Mt Glorious) to Cunningham's Gap (not Toowoomba) to the border (including Springbrook) **for myself**, but this is totally arbitrary and **can be changed by the recorder**. The first recording column is designed for your garden (one * for adults and two * for larvae) and is marked as "Corinda" which of course **will** be changed by the recorder. **Pieris rapae has been marked as an example.**

Send me an email if you are interested. #

BUTTERFLY AND OTHER INVERTEBRATES CLUB PROGRAMME

Planning and Management Meeting

What: Our planning meetings are informative and interesting. As well as planning our activities we share lots of information. All members are welcome as this activity is also a general meeting of members.
When: **Saturday, 13th November, 2010** from **1.30 pm**
Where: Lois Hughes' home, Mt. Cotton (phone Lois for directions)
RSVP: Lois on 07 3206 6229 or Daphne on 07 3396 6334

The official launch of **Butterfly Plants for Poverty** will be in the form of an **Open Day on Sunday 21st November**. The Open Day will begin at 9am. Come and enjoy the award winning native garden with thousands of shrubs and flowers, guest speakers, information booths, food vans, nursery, solar powered home, hundreds of little sweet-singing birds, butterflies, billabong, rooftop viewing deck and 700 metres of walking paths. Thousands of butterfly attracting plants will be on sale at $2 each to benefit the project.
Website ready soon – www.butterflyplantsforpoverty.org Ray 0409 491 419 email: delray12@bigpond.com

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Disclaimer

The magazine seeks to be as scientifically accurate as possible but the views, opinions and observations expressed are those of the authors. The magazine is a platform for people, both amateur and professional, to express their views and observations about invertebrates. These are not necessarily those of the BOIC. The manuscripts are submitted for comment to entomologists or people working in the area of the topic being discussed. If inaccuracies have inadvertently occurred and are brought to our attention we will seek to correct them in future editions. The Editor reserves the right to refuse to print any matter which is unsuitable, inappropriate or objectionable and to make nomenclature changes as appropriate.

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- Those members who have sent in letters and articles
- Lois Hughes who provides illustrations including the cover
- Daphne Bowden who works on layout, production and distribution
- John Moss for scientific referencing and proof reading of various articles in this issue of the magazine
- Printing of this publication is proudly supported by Brisbane City Council

We would like to thank all these people for their contribution.

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Butterfly and Other Invertebrates Club Inc.
PO Box 2113
RUNCORN Q. 4113

Next event – Planning and Management Meeting
Saturday, 13th November (see Programme for details)